

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
24 June 2004 (24.06.2004)

PCT

(10) International Publication Number
WO 2004/052540 A3

(51) International Patent Classification⁷: **G01N 27/26**

(21) International Application Number:
PCT/US2003/038707

(22) International Filing Date: 5 December 2003 (05.12.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/431,039 5 December 2002 (05.12.2002) US

(71) Applicant (for all designated States except US): **PROTASIS CORPORATION** [US/US]; 734 Forest Street, Marlborough, MA 01752 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **STRAND, David**

[US/US]; 16 Nason Hill, Sherborn, MA 01770 (US). **BARROW, David** [GB/GB]; 61 Lake Road West, Cardiff, Roath Park CF23 5PH (GB).

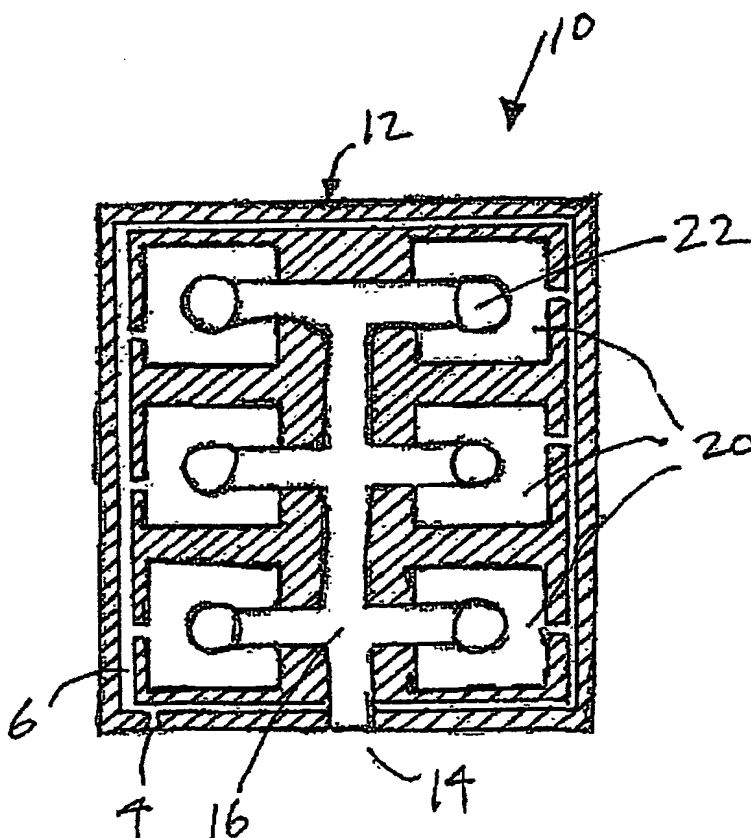
(74) Agents: **MCDERMOTT, Peter, D.** et al.; Banner & Witcoff, Ltd., 28th State Street, Twenty Eighth Floor, Boston, MA 02109-1775 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,

[Continued on next page]

(54) Title: **CONFIGURABLE MICROFLUIDIC SUBSTRATE ASSEMBLY**



(57) Abstract: A microfluidic substrate assembly (10) includes a substrate body (12) having at least one fluid inlet port (14). At least one microscale fluid flow channel (16) in the substrate is in fluid communication with the inlet port for transport of a fluid to be tested. The substrate body also has a plurality of sockets (20), with each of one or more sockets configured to receive an operative component (21). At least one socket is in communication with the microscale fluid flow channel.



SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(88) Date of publication of the international search report:
16 September 2004

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/38707

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 27/26

US CL : 204/409; 422/100

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 204/409,600,601,450,451; 422/100,99,68.1,70,129

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X, E --- Y, E	US 6,699,384 B1 (LIN et al.) 02 March 2004 (02.05.2004), abstract; Figures 1, 2, and 5; and column 5, lines 20-34.	1-5,7-10,12,13,31-34,37,38,40,41,43,48,49 ----- 6,14,15,16,21,51-53,55-57,59
X --- Y	US 5,580,523 A (BARD) 03 December 1996 (03.12.1996), abstract and Figures 1a-1d and 2-4.	1,2,4-9,12,13,31-34,37,43,44,48,49,61 ----- 3,14,35,36,45,51-53,55-57,59



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

18 May 2004 (18.05.2004)

Date of mailing of the international search report

08 JUN 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Alex Noguerola

Telephone No. (571) 272-1300

INTERNATIONAL SEARCH REPORT

PCT/US03/38707

C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P — Y,P	US 6,632,400 B1 (BRENNEN et al.) 14 October 2003 (14.10.2003), abstract and Figures 1-5.	1,2,4,5,7-10,12,31-33,37,48,61 3,6,13-16,21,34-36,38,40,41,51-53,55-57,59
X,P — Y,P	US 2002/0124896 A1 (O'CONNOR et al.) 12 September 2002 (12.09.2002), abstract and Figures 3A, 3B, 5A-5C, 7A, 7B, and 8.	1,2,4-9,12,31-33,37,48,61 3,13,14,34-36,51-53,55-57,59
X,P — Y,P	US 2003/0012697 A1 (HAHN et al.) 16 January 2003 (16.01.2003), abstract and Figures 2 and 4-6.	1,2,4-9,12,31-33,37,48,61 3,13,14,34-36,38-41,45,46,49,51-53,55-57,59
Y	Derwent abstract for WO 9957310 A2 (BERNAUER) 11 November 1999 (11.11.1999).	55-57

INTERNATIONAL SEARCH REPORT

PCT/US03/38707

Continuation of B. FIELDS SEARCHED Item 3:

EAST

search terms: microfluid\$, removable, modul\$, plug\$